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TENTH FEDERAL RESERVE DISTRICT

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FLOOD DAMAGE*

Occurrence Floods have their beginning on the land where water concentrates either in the form of rainfall or snow. Whenever a watershed is subjected to excessive rainfall or melting snow the volume of surface runoff water grows rapidly and usually exceeds the normal carrying capacity of drainageways, branches, and creeks. Thus, the water spills over the natural confines of the stream course, often covering valuable crop and pasture land and causing severe damage to soil productivity. A rapid increase in the discharge of these small streams is frequently the cause of serious flooding of large rivers, resulting in millions of dollars of damage to farm land and to industrial improvements in cities along river courses.

Much productive soil is lost forever as a result of stream bank erosion, channel shifting, and silting. Such damage to valuable farm land is clearly a form of soil erosion and is therefore an important consideration in the broad field of soil conservation. Soil erosion by flood waters is the most difficult and expensive type of soil loss which a sound program of soil conservation attempts to combat.

There are somewhat over 2 million acres of land along the lower Missouri River and its principal tributaries that are subject to serious flooding. Almost as many acres of land in Oklahoma, northern New Mexico, and southern Kansas and Colorado are subject to overflows from streams not included in what is known as the Missouri River Basin. Probably there are no streams of any consequence in the Tenth District that have not flooded at some time or another, but there are several that overflow much more frequently than others. The Platte and North Platte Rivers that flow through Colorado, Wyoming, and Nebraska, the Republican River in Nebraska and Kansas, the Marais des Cygnes, Neosho, and Smoky Hill Rivers in Kansas, and the Arkansas and Canadian Rivers in Oklahoma are examples of streams that flood with unusual frequency. The overflows along these rivers have caused millions of dollars of damage to adjacent farm land and cities.

Generally, floods are more frequent and severe in the eastern one half of the District where rainfall and snows are heavier. However, flash floods along small streams are common in the dry plains areas of Wyoming, Colorado, New Mexico, Nebraska, Kansas, and Oklahoma, where the "gullywasher" or torrential type of rainstorm occurs. It is sometimes the case that floods in the lower reaches of a watershed are caused by unusually heavy rains or rapid snow thaws in the normally drier regions in the upper reaches of the Great Plains. The 1935 flood along the Republican River was such an instance. It was by far the greatest flood along this river, exceeding by 12 feet any overflow in 70 years at Oxford, Nebraska. The flood was caused by torrential rains in northeastern Colorado, where the river has its beginning. On the other hand, floods along the Neosho and Cottonwood Rivers in the high rainfall area of southeastern Kansas have been more frequent than along any other major rivers in that state. At Oswego, Kansas, the Cottonwood River has flooded 88 times in 41 years.

Damage to Farms and Cities Each time such overflows occur, much rich river bottom crop land is washed away or otherwise rendered useless. The value of many of these highly productive soils is frequently destroyed during floods by stream bank erosion, shifting of the stream channel, or by infertile sand and silt deposits. Also, stream currents flooding over cultivated fields without vegetative cover often carry away huge quantities of topsoil and subsoil, leaving large depressions known as potholes. In one instance, the Arkansas River overflowed twice during May, 1933, between Fort Smith, Arkansas, and Fort Gibson, Oklahoma, resulting in

*This is the fifth and concluding article in a series on soil conservation and presents in some detail one important phase of that general subject. The first article, "Soil Conservation," which was introductory in nature, appeared in the January 31, 1948, issue of the Monthly Review; the second article, "Wind Erosion of Soil," appeared in the May 31, 1948, issue; the third article, "Water Erosion of Soil," appeared in the August 31, 1948, issue; and the fourth article, "Fertility Erosion of Soil," appeared in the January 31, 1949, issue of the Monthly Review.

the complete loss of an estimated 1,500 acres of land adjacent to the river. At the same time, it was believed that more than an additional 1,500 acres of land were damaged by the deep deposits of silt left over large areas by the flood waters.

Unfortunately, it is only the spectacularly destructive floods of major rivers that are vividly described and pictured to the public. The oftentimes devastating local damage done by floods along small streams and less well-known rivers frequently escapes all but local notice. Acre for acre, however, these local overflows are usually just as destructive to life, property, and soil as the large floods. For example, a flood along the Elkhorn River in Nebraska in 1944 covered about 300,000 acres of valuable crop and pasture land. Deposits of sand and silt were as deep as one foot and were so extensive that some 50,000 acres of formerly rich crop land could not be planted to crops that year. If the average yearly gross return from this bottom land were only $40 per acre, the crop loss might be calculated at 2 million dollars, exclusive of the machinery, labor, and materials cost to rehabilitate the land in subsequent years.

Farmers in areas subject to flooding sustain many more losses than the damage done to the land. Some of the more important are growing crops, stored crops, livestock and poultry, buildings, household furnishings, stored food, machinery, fences, and the farm water supply. Individual farmers often suffer severe losses in all of these categories, the losses sometimes resulting in financial difficulties and eventual bankruptcy. Many a valley farmer has been "cleaned out" by a flood that destroyed virtually all of his lifetime accumulation of physical and financial assets.

Early settlements were commonly built along rivers and smaller streams because of river transportation and readily available water supplies. Subsequently, settlements grew into towns and cities and the adjacent lowlands became increasingly valuable for railroad lines and thus as sites for industrial development. Manufacturing and processing plants, highways, railroads, and bridges have been constructed on these bottom lands during periods when floods have been absent. Frequently, the construction of these projects has involved filling in portions of river channels and otherwise narrowing the natural courses of streams. Thus, the normal flood plains of many streams in and near cities have been obstructed by man-made barriers that tend to hinder rather than facilitate the management of excess drainage water as it flows through thickly populated areas. Although competent authorities state that there are no valid reasons for believing that floods in recent years are of any greater magnitude than those which have occurred in the past, or that the frequency of great floods is increasing, it is evident that flood heights are increasing.

Cities such as Omaha, Kansas City, Denver, and Tulsa have developed sizable industrial and processing facilities in adjacent river flats. These and other towns and cities in the Tenth District have suffered varying degrees of damage to industrial installations from overflows of major streams. Serious losses of buildings and equipment, raw materials, and finished products have generally been incurred during these floods, not to mention costly delays in operating schedules of the affected plants. Railroad and truck facilities servicing these developments have likewise been severely damaged on several occasions, further disrupting normal industrial operations. Such overflows have also caused considerable loss of life and destroyed thousands of homes in what is usually termed the low rent housing area commonly found along river bottom sections of cities.

The great 1903 flood of the Kansas and Missouri Rivers at Kansas City, Kansas, and Kansas City, Missouri, reached a river height of 35 feet. This flood covered the entire "bottoms" area between and adjacent to the two cities. It made 23,000 people homeless, 19 lives were lost, 16 bridges were destroyed, and gas, water, and light services were seriously disrupted for several days. The property loss in this area was estimated at somewhat over 20 million dollars. Severe flooding of many upstream tributaries as far west as Salina, Kansas, also wrought extensive damage to smaller cities and towns. A flood protection program for the large industrial area of the Kansas Citys has since been planned and partially completed. However, construction of the required dikes, levees, new channels, and drainage systems will not be completed for a number of years. In the meantime, it is estimated that a flood of the proportions of that of 1903 in this industrialized area today would cause a property loss in excess of 80 million dollars, exclusive of financial losses that would be sustained by the disruption of business activity.

Usually, smaller towns and communities along principal rivers and other sizable streams have little or no protection from stream overflow, except that furnished by the natural topography of their locations. The business and residential sections of many such towns are on the bluffs and uplands that rise away from the stream so that flood damage to private and public property is often minor. There are, however, a considerable number of small towns that have grown up in wide river valleys. Since industry and manufacturing are relatively unimportant in these communities, the principal damage wrought by floods is to homes, personal property, business buildings,

and civic improvements. Likewise, such locally financed improvements as county roads and bridges often are seriously damaged or almost completely destroyed. Ottawa, Kansas, located in the east central part of the state, is an excellent example of a city development in the valley of a river subject to frequent overflow. The Marais des Cygnes River flows through the north side of the town and has flooded at that point 27 times in 43 years. In November, 1928, seventy blocks of the town were covered with flood water. There were 30 houses washed away, 40 others washed from their foundations, and altogether 536 buildings were damaged. The estimated damage in the city, exclusive of that to railroads, was $343,000.

Controls It has long been recognized that since floods originate on the land, proper water management on each acre of crop, pasture, and timber land is a basic step in any flood control program for a watershed. Thus, soil conservation practices such as crop rotations and terracing that increase the amount of water absorbed and held by the soil substantially reduce or delay the amount of surface runoff or drainage water that must eventually pass through small streams and major rivers. Actually, however, the water absorptive capacity of the soil in many areas has been steadily reduced over the years, rather than increased. Many pastures have been overgrazed and have become ridden with gullies. Timber, brush, and sod have been indiscriminately removed from sloping land, while much crop land has been cultivated with too little attention given to soil erosion. Crop residues have been burned off rather than plowed back into the soil, resulting in a sustained loss in the supply of organic matter in the soil. Thus, the first step in a direct approach to flood control is proper water management on individual farms. Such a management program can be attained only by increasing the use of such soil conservation practices as are designed to reduce surface runoff. Some of these measures are grass waterways, contour cultivation, terraces, strip cropping, soil building crop rotations, good use of farm manure and crop residues, permanent grass and trees or brush on steep slopes, proper stocking and management of pasture and grazing land, farm ponds, diversion ditches, and reforestation.

These devices are generally within the grasp of every individual farmer and if applied would serve to reduce the number and severity of floods along small streams in the upper portion of watersheds. However, the individual farmer in the lower reaches of a watershed is powerless to deal with the excess of drainage water that accumulates far upstream and floods his land. Except in unusual instances, the construction and maintenance costs of adequate dikes or levees are beyond the means of the individual river farmer or groups of farmers. Thus, the flooding of large rivers that washes away and otherwise destroys valuable crop and pasture land is a problem that must be attacked on an area basis or from the standpoint of the public interest.

Along small streams, the individual landowner can frequently minimize bank erosion and new channel development by the construction of jetties in the stream bed to divert the main current away from eroding banks. In some instances, serious stream bank erosion can be halted by excavating or blasting a new course through waste areas where the land is not suitable for crops or pasture. Sand and silt deposits left on flooded fields are most often deficient in organic matter and nitrogen and consequently are less fertile than the original topsoil that they cover. Such deposits are sometimes so deep and extensive that large areas of crop land can no longer be cultivated profitably. The rather extensive "Hisaw" bottoms, located at the mouth of the South Canadian River in Oklahoma, were abandoned for this reason following a flood in November, 1941.

If silt and sand deposits are not too deep or extensive, several rehabilitation measures may be successfully applied by the individual farmer. Deep plowing with special equipment may be sufficient to turn under the infertile silt material and return the fertile topsoil to the surface. The use of heavy earth-moving machinery may be required to remove the alluvial deposits from the underlying fertile soil and also to fill potholes and new channels cut by flood waters. Although some deeply silted fields may produce good crops for several years, it is usual that such soil improvement practices as crop rotations including legumes, nitrate or phosphorus fertilizer applications, and special cropping systems will eventually have to be used on damaged fields.

The continued growth of industrial areas in cities along rivers has gradually increased the investment in property that is subject to damage and loss from flood waters. As a means of protecting existing facilities and encouraging further development, many cities, often with the assistance of Federal funds, have financed the construction of flood walls, levees, and other types of flood guards along that part of a river that passes through the metropolitan area. Generally, these projects are still in various stages of completion and will not furnish the desired protection from flood waters for many years. However, in several cities these partially finished projects have already been credited with preventing thousands of dollars in damage to industrial developments, municipal improvements, and transportation facilities.

Flood control programs of individual cities and towns have usually been directed toward the management of flood waters approaching and passing through the city, with no provision for the protection of farm land and towns farther downstream. Consequently, most municipal flood programs have involved the construction of flood walls and levees, deepening stream channels through the city, and the construction of new channels and diversion basins. Recently, however, many municipalities have placed increasing emphasis on better water management along entire watersheds, rather than at scattered points along a stream course. This has been notably true in localities where furnishing water for industrial uses has become a serious handicap to further industrialization of the area. In such instances, there has been a marked increase in the extent to which city interests are willing to encourage the wider use of soil conservation practices on the crop lands, pasture lands, and woodlands lying along their watershed.

Increasing public and civic interest is also being exhibited in such projects as upstream reservoirs as a means of providing a reserve supply of water for city and industrial users, in addition to their value in regulating the flow of excess drainage water through the main river courses. Generally, these reservoirs are of two types: (1) Those which have the dual purpose of impounding flood water and utilizing the water to generate electric power and (2) those constructed for the specific function of flood control. The Grand River Dam and Reservoir in southeastern Oklahoma is an example of the first type, and the Kanopolis Dam on the Smoky Hill River in Kansas is typical of the second type. The Harlan County project along the Republican River in Nebraska and the Big Thompson project on the Big Thompson River in Colorado are other important reservoirs that are completed or are being constructed.

Other Aspects of Flood Control Flood control in farm and city areas was generally considered a matter of local responsibility in the years prior to 1917. Such control projects as were undertaken up to that time were financed from assessments on the property directly benefited. The passage of the Flood Control Act of 1917 was the first national recognition given to the public responsibility for flood control. In recent years the provisions of Federal and state flood control laws have made even larger allowances for the fact that sound and necessary flood control measures are too extensive to be fully financed by local interests. Consequently, the burden of planning and executing long-time flood control programs has been delegated largely to the Federal, state, and municipal governments.

A major consideration in the development of flood control programs is the management and use of the surplus water impounded in flood control reservoirs. The economical use of such water varies in different areas, depending upon climate, soil, and topography. In the Tenth District it is generally true that the upper reaches of the major river basins can most advantageously use stored water for irrigation of surrounding crop land. Other localities not suitable for further agricultural development have more interest in the use of such water to generate electric power. In the lower reaches of these basins, the surplus water in reservoirs is commonly desired to maintain uniform river heights which facilitate the use of such streams for river boat and barge transportation. Practically all reservoirs, regardless of location, have value as sites for recreational and resort development and as fish and wild life preserves. While these developments are secondary to the primary purpose of flood control, such projects are calculated to provide income that will eventually offset the construction cost of the reservoirs and add to the prosperity of local communities.

Much difference of opinion exists as to the value of flood control projects in furthering the economic interests of a community and as to the procedure that should be followed in governing entire projects. Fortunately, however, several flood control programs along with secondary developments of irrigation, power, recreation, and navigation have been in operation in various states for what will soon be a sufficient period of time to warrant a serious analysis of the administrative problems and of the economic effects of flood control programs on their respective areas. It would seem reasonable to expect that a careful and objective study of such projects would furnish some basis for resolving many of the differences of opinion that have arisen in attempting to evaluate the true social and economic benefits of flood control programs now being contemplated.

BUSINESS AND AGRICULTURAL CONDITIONS

MEMBER BANK CREDIT

The principal change in District member bank items of condition during January was a decrease of 143 million dollars, or over 2 per cent, in total deposits. The reduction in deposits reflected principally heavy Federal income tax payments by depositors

SELECTED ITEMS OF CONDITION OF TENTH DISTRICT MEMBER BANKS
(In millions of dollars)

	All Member Banks			Reserve City Banks			Country Banks		
	Jan. 26 1949	Dec. 29 1948	Jan. 28 1948	Jan. 26 1949	Dec. 29 1948	Jan. 28 1948	Jan. 26 1949	Dec. 29 1948	Jan. 28 1948
Loans and investments	4,290	4,273	4,315	2,297	2,280	2,332	1,993	1,993	1,983
Loans and discounts	1,506	1,508	1,292	844	850	781	662	658	511
U. S. Government obligations	2,406	2,377	2,661	1,264	1,237	1,366	1,142	1,140	1,295
Other securities	378	388	362	189	193	185	189	195	177
Reserve with F. R. Bank	924	934	828	551	563	499	373	371	329
Balances with banks in U. S.	578	668	579	254	288	243	324	380	336
Cash items in process of collection	232	293	253	214	271	236	18	22	17
Gross demand deposits	5,100	5,244	5,053	2,807	2,894	2,794	2,293	2,350	2,259
Deposits of banks	815	876	870	750	805	802	65	71	68
Other demand deposits	4,285	4,368	4,183	2,057	2,089	1,992	2,228	2,279	2,191
Time deposits	669	668	673	358	357	363	311	311	310
Total deposits	5,769	5,912	5,726	3,165	3,251	3,157	2,604	2,661	2,569
Borrowings	6	7	18	5	6	17	1	1	1

during the month. The decline in deposits in country member banks amounted to 57 million dollars, mostly in demand deposits other than interbank. As the country banks met the drain of funds on their own institutions by withdrawals from their balances with the city banks, the latter group experienced a sizable reduction in both interbank deposits and other deposits. In District reserve city member banks, interbank demand deposits declined by 55 million dollars and other demand deposits declined by 32 million.

Loans and investments of District country member banks showed little change during January. Loan volume expanded by 4 million dollars, total Government security holdings increased by only 2 million, and other investments declined by 6 million. The volume of reserve city bank loans outstanding decreased by 6 million dollars during the month. However, Government securities held by city banks expanded by 27 million dollars. A decrease in Treasury notes and an increase in Treasury certificates of indebtedness reflected the maturing of a note issue on January 1 for which the United States Treasury offered certificates in exchange. Increases in city bank holdings of Treasury bills and Treasury bonds represented net purchases by those banks. The ability of the city banks to increase their earning assets despite the fact that they had to meet a substantial drain of funds resulted from their withdrawal of 34 million dollars from their balances with other domestic banks and a reduction of 57 million in the dollar volume of cash items which they had in process of collection.

	Bank Debits		
	Jan. 1949	Jan. 1948	Change from 1948
	(Thousand dollars)		(Per cent)
Colorado			
Colo. Springs	37,359	34,177	+9
Denver	478,157	489,955	−2
Gr. Junction	12,601	13,619	−7
Greeley	17,514	25,420	−31
Pueblo	40,064	37,175	+8
Kansas			
Atchison	14,084	10,635	+32
Emporia	9,843	11,069	−11
Hutchinson	52,599	56,918	−8
Independence	6,492	7,582	−14
Kansas City	68,843	66,352	+4
Lawrence	10,225	10,693	−4
Parsons	7,380	9,344	−21
Pittsburg	11,542	12,713	−9
Salina	35,703	49,768	−28
Topeka	90,129	88,845	+1
Wichita	260,326	283,978	−8
Missouri			
Joplin	26,831	27,795	−3
Kansas City	1,048,095	1,144,714	−8
St. Joseph	102,433	114,675	−11
Nebraska			
Fremont	15,143	17,414	−13
Grand Island	19,382	23,598	−18
Hastings	12,728	15,626	−19
Lincoln	74,734	77,243	−3
Omaha	454,783	549,528	−17
New Mexico			
Albuquerque	83,873	80,183	+5
Oklahoma			
Bartlesville	126,586	84,186	+50
Enid	39,379	45,691	−14
Guthrie	4,373	4,700	−7
Muskogee	21,508	24,235	−11
Okla. City	301,096	314,581	−4
Okmulgee	6,332	7,329	−14
Ponca City	16,559	25,119	−34
Tulsa	541,155	480,230	+13
Wyoming			
Casper	30,066	27,407	+10
Cheyenne	30,635	33,754	−9
District, 35 cities	4,108,552	4,306,251	−5
U. S., 333 cities	105,204,000	105,193,000	0

DEPARTMENT STORE TRADE

Dollar volume of sales at reporting department stores in this District in January was 14 per cent smaller than a year earlier. The decline was due in part to the fact that the month had one less trading day this year than last, but probably more important in the January decline were extremely adverse weather conditions and a continuation of the general slackening in consumer demand that has been in evidence since last November. In the first three weeks of February, sales showed some improvement and were slightly above the level of a year ago. Sales declined much more than is usual from December to January, and the seasonally adjusted index of daily average sales dropped from 332 per cent of the 1935-39 average in December to 280 per cent in January.

Department store inventories increased during January but by less than the usual amount, and the seasonally adjusted index of stocks declined slightly from 321 per cent of the 1935-39 average at the end of December to 317 per cent at the end of January. Stocks of merchandise on hand January 31 were little changed in value from those of a year ago, while the volume of outstanding orders continued about 40 per cent lower than a year earlier.

Department store sales and stocks in leading cities:

	Sales Jan. '49 comp. to Jan. '48	Stocks Jan. 31, '49 comp. to Jan. 31, '48
	(Percentage change)	
Denver	−5	+12
Hutchinson	−26	+5
Topeka	−18	−9
Wichita	−6	+1
Joplin	−27	−1
Kansas City	−16	−9
St. Joseph	−16	*
Lincoln	−18	*
Omaha	−9	*
Oklahoma City	−25	+4
Tulsa	−15	*
Other cities	−17	−5
District	−14	0

* Not shown separately but included in District total.

INDUSTRIAL PRODUCTION

Meat Packing Packers' purchases of cattle at principal markets in the District in January were about 4 per cent greater than in January, 1948, while purchases of hogs and sheep at these markets were about 4 per cent smaller than in January, 1948. However, preliminary figures on the receipts of livestock at various river markets in the first half of February give evidence that packers' purchases of all livestock in the first half of that month will be down moderately from the numbers purchased in February of 1948. Recurring snow and ice storms throughout the central portions of the District in January and February continued to disrupt shipping plans of livestock producers, with the result that market receipts have shown more than usual fluctuations from day to day.

Flour Milling Flour milling operations in the Southwest in mid-February averaged about 82 per cent of full-time capacity and were thus about 6 per cent below the level of operations in January. Many mills at interior points operated only three to four days during the week, while several mills at Kansas City scheduled operations for four or five-day weeks. A decided lag in export business and a decline in the number of backlog orders were largely responsible for this decline in flour milling operations.

Sales of flour in the Southwest in the week ended February 12 averaged about 32 per cent of capacity, with the bulk of the sales being made on February 7 and 8. A considerable number of flour users purchased limited quantities on February 8 at the time that wheat prices fell rather sharply. On subsequent days, when wheat prices recovered somewhat, flour sales to bakers and other large users were very few in number. It is estimated that most large users have only sufficient flour on hand to fill their needs for thirty days. During the week ended February 12, the Army Quartermaster was the only Government buyer in the Southwestern flour market. No important sales for export were made up to mid-February, and sales of family flour remained in about the normal volume for this time of year.

Employment Increased unemployment was the outstanding development in the nation's labor force between December and January. Census figures show that early in January unemployment increased to a level of 2,650,000, or 600,000 higher than a year ago, while total civilian employment declined to 57½ million, or 2 million lower than in December. The Bureau of Labor Statistics states that the most significant changes in employment have occurred in the manufacturing industries. "From a postwar high of 16,700,000 in September, manufacturing employment has declined in each of the past four months to a January figure of 15,875,000. Employment in the durable goods industries as a whole, which in January amounted to 8 million, is 220,000 below the level of January, 1948. The nondurable goods industries, with 7.8 million employees in January, show a somewhat smaller drop over the year—about 170,000." The January decline in manufacturing employment has received particular attention because it reflects nonseasonal as well as seasonal cutbacks in production. The 1½ million decrease in nonagricultural employment in January is about twice the customary change for this time of year, according to the Bureau of the Census, and apparently nonseasonal layoffs were as much a factor in this change as the usual seasonal declines in trade, construction, and various other industries.

In the Tenth District, severe winter weather has accelerated employment declines. The Nebraska Labor Commissioner reports that the number of jobless persons registered on January 31 reached the highest point in nearly two years. The 13,225 job seekers this January represented an increase of 45 per cent over the number in December and 37 per cent over January a year ago. Bad weather, rather than a downward trend in business, was attributed to be the major factor in Oklahoma employment declines during January. Colorado, with one per cent of the population of the United States, has had only one tenth of

one per cent of the recipients of unemployment compensation during the last two years. However, generally declining business conditions in the Denver area during January caused employment declines from both the December level and that of January, 1948.

Crops Up to the middle of February there had been no relief from the recurring snow and ice storms that have characterized the winter weather in states of the Tenth District. High winds, dust storms, snow, cold waves, thunderstorms, floods, and tornadoes all occurred at various points in these states from January through mid-February. Moisture conditions throughout the area were generally favorable, with no positive reports of extensive winter killing of wheat up to mid-February. College officials in Nebraska took some samples of wheat from a field that had been covered with two to three inches of ice for about a month and placed them in a greenhouse. Under greenhouse conditions of humidity and temperature, these wheat samples soon began to show normal growth. This indicates that wheat in areas that have been covered with ice and snow for some period of time has not sustained any permanent damage. However, thawing has occurred in the southern portions of the District and has covered low areas in wheat fields with water. If water stands over these spots for a period of two or three weeks, the wheat plants will smother. Soil moisture supplies in northern New Mexico and western Oklahoma, which remained considerably below normal in the late summer and throughout the fall of 1948, were materially increased by moisture received after the middle of January. Reports from that area indicate that with normal spring weather, wheat should respond to this moisture with a vigorous spring growth.

Grain prices exhibited a definite weakness in early February which was reminiscent of the market conditions that developed in February, 1948. Prices of wheat, corn, and soy beans in early February dropped their permissible limits for one day's trading at the organized grain exchanges. Some of this loss was recovered in the following days when various Government authorities gave assurance that grain export commitments would be vigorously pursued. The amount of free wheat remaining at terminal points is reported to be small. Grain men expect milling concerns and other users to experience some difficulty in the early spring months in securing adequate supplies.

Livestock Storm losses of cattle and sheep in the blizzard areas of South Dakota, Nebraska, Wyoming, and Colorado have been estimated by the Department of Agriculture at 81,000 and 97,000, respectively, as of February 1. These figures do not take into account those cattle, calves, sheep, and lambs that have perished since February 1, nor the expected loss of new calves and lambs this spring that is likely to result from the poor condition of mature cattle and sheep. The losses of cattle and calves as of February 1 amounted to about 2 per cent of the cattle and calves on hand in that area January 1, 1949. Sheep losses were about 5 per cent of the stock sheep on hand January 1. About 46,000 head of cattle were lost in Nebraska, 16,000 head in Wyoming, and 3,000 head in Colorado.

On page 8 of this issue of the Monthly Review is a table showing the estimates by the Department of Agriculture of the number of cattle and calves, sheep and lambs, hogs, and horses and mules on farms January 1, 1949. These figures have not been adjusted for death losses that occurred following January 1 in the blizzard stricken areas of the west.

The number of all cattle and calves on farms in the United States on January 1, 1949, was slightly higher than on that date in 1948. This increase percentagewise was only one half of one per cent. Of considerable more importance was the age and sex of cattle on hand January 1. Beef cows and heifers one year old and over made up 26.4 per cent of the total number of all types of cattle in the inventory. This is an unusually high percentage of female beef animals and indicates a tendency to increase the size of breeding herds for the purpose of producing larger calf crops. The number of milk cows and heifers 2 years old or over declined 2 per cent from January 1, 1948, causing the number of milk cows in the nation to fall to the lowest level since 1931. Hog numbers increased 4 per cent from January 1, 1948, to January 1 this year, while sheep and lamb numbers declined about 8 per cent in that period. With the exception of sheep, the liquidation of livestock population that began about 1944 appears to have been reversed.

In the states that comprise the Tenth District, the changes in livestock numbers were not large nor were they significantly different from the changes that occurred in the entire country. The number of all cattle and calves in these states on January 1 this year was 2 per cent greater than on January 1, 1948, while hog numbers increased by 7 per cent and sheep numbers were down 6 per cent from a year ago. The largest increase in cattle population took place in Nebraska where the number on hand this January 1 was about 114,000 head greater than on that date in 1948. A large part of this increase is attributable to the sharply higher number of cattle on feed in Nebraska this winter as compared with the winter of 1948.

LIVESTOCK ON FARMS JANUARY 1

Estimated by the United States Department of Agriculture

Number, in thousands of head — *Value, in thousands of dollars*

All Cattle and Calves

	1949	1948	1947	1938	1934	1949	1948	1947	1938	1934
Colorado	1,854	1,800	1,731	1,430	1,773	248,436	212,400	156,136	44,873	25,709
Kansas	3,591	3,325	3,537	2,505	3,860	456,057	379,050	315,500	77,830	58,672
Missouri	2,959	2,959	3,051	2,350	2,875	378,752	325,490	291,065	81,475	44,275
Nebraska	3,911	3,797	3,922	2,780	3,980	527,985	455,640	358,471	89,071	69,650
New Mexico	1,167	1,144	1,179	1,288	1,560	148,209	117,832	89,958	35,343	22,152
Oklahoma	2,481	2,506	2,724	2,160	2,750	282,834	236,817	195,038	56,743	30,525
Wyoming	1,011	1,053	1,053	820	1,050	132,441	123,201	97,718	26,470	16,800
Seven states	16,974	16,584	17,197	13,333	17,848	2,174,714	1,850,430	1,503,886	411,805	267,783
United States	78,495	78,126	81,207	65,249	74,369	10,587,060	9,094,334	7,907,198	2,386,808	1,322,281

Milk Cows and Heifers Kept for Milk

	1949	1948	1947	1938	1934	1949	1948	1947	1938	1934
Colorado	206	215	224	235	300	41,200	35,905	29,120	10,810	6,600
Kansas	622	648	697	709	967	116,936	106,272	94,095	31,905	21,274
Missouri	956	975	1,007	934	1,097	155,828	134,550	126,882	41,096	20,843
Nebraska	502	514	554	629	820	100,902	89,436	75,344	30,192	21,320
New Mexico	65	65	62	74	81	11,700	8,450	6,820	2,812	2,025
Oklahoma	648	704	765	718	838	99,792	87,296	73,440	26,566	13,408
Wyoming	56	60	65	68	78	10,864	10,020	9,295	3,400	2,106
Seven states	3,055	3,181	3,374	3,367	4,181	537,222	471,929	414,996	146,781	87,576
United States	24,450	25,039	26,098	24,466	26,931	4,723,110	4,102,968	3,787,080	1,343,886	727,137

Hogs, Including Pigs

	1949	1948	1947	1938	1934	1949	1948	1947	1938	1934
Colorado	334	304	276	253	440	11,623	13,254	9,770	2,485	1,496
Kansas	1,203	1,094	1,176	804	2,430	42,586	44,198	39,161	7,861	8,384
Missouri	3,851	2,533	3,605	2,622	4,113	138,251	135,314	120,407	27,470	14,190
Nebraska	2,403	3,403	2,503	1,507	5,010	109,817	132,405	106,878	18,566	21,543
New Mexico	72	60	67	80	67	2,124	2,154	2,151	770	241
Oklahoma	819	731	731	730	1,180	22,604	22,807	17,690	6,081	3,245
Wyoming	90	76	70	60	87	3,195	3,025	2,331	747	300
Seven states	8,772	8,201	8,428	6,056	13,327	330,200	353,157	298,388	63,980	49,399
United States	57,139	55,028	56,921	44,525	58,621	2,183,697	2,356,160	2,049,066	501,352	239,760

All Sheep and Lambs

	1949	1948	1947	1938	1934	1949	1948	1947	1938	*1934
Colorado	1,705	1,897	1,780	2,853	3,028	34,811	32,557	25,062	17,356	12,818
Kansas	711	724	1,353	614	689	11,812	11,698	19,213	3,580	2,687
Missouri	1,246	1,235	1,332	1,441	1,310	20,655	19,490	18,082	9,782	4,978
Nebraska	759	779	716	859	1,055	13,125	14,007	10,886	5,015	4,395
New Mexico	1,423	1,450	1,471	2,170	2,757	24,270	19,228	16,023	11,262	8,822
Oklahoma	131	155	214	375	183	1,874	2,181	2,465	2,134	586
Wyoming	2,170	2,415	2,519	3,543	3,873	39,581	39,540	31,575	22,392	15,879
Seven states	8,145	8,655	9,385	11,855	12,895	146,128	138,701	123,306	71,521	50,165
United States	31,963	34,827	37,818	51,210	53,503	548,915	534,679	477,296	312,893	202,241

Horses and Colts

	1949	1948	1947	1938	1934	1949	1948	1947	1938	1934
Colorado	126	140	161	239	297	3,780	4,900	5,635	16,137	12,177
Kansas	219	246	279	450	604	7,884	8,856	10,323	28,225	32,012
Missouri	394	428	450	534	531	16,548	18,404	22,950	41,855	31,329
Nebraska	262	301	338	523	666	9,694	10,836	12,506	35,024	38,628
New Mexico	88	93	95	135	143	3,168	3,534	3,990	6,926	5,720
Oklahoma	231	257	279	400	421	7,161	8,224	10,323	24,969	22,313
Wyoming	81	92	100	133	158	2,430	2,760	3,000	7,802	5,688
Seven states	1,401	1,557	1,702	2,414	2,820	50,665	57,514	68,727	160,938	147,867
United States	5,921	6,589	7,249	10,995	12,052	309,764	365,802	428,798	999,336	806,038

Mules and Mule Colts

	1949	1948	1947	1938	1934	1949	1948	1947	1938	1934
Colorado	5	6	7	13	22	270	372	448	1,109	1,188
Kansas	16	19	24	70	120	928	1,121	1,536	5,920	8,400
Missouri	92	105	135	214	264	6,256	7,770	11,475	23,024	20,328
Nebraska	9	12	15	55	83	468	636	825	4,802	6,142
New Mexico	6	6	6	10	19	252	336	348	798	1,045
Oklahoma	35	40	52	165	258	1,680	2,200	3,016	14,814	18,318
Wyoming	1	1	1	15	3	41	41	49	1,500	180
Seven states	164	189	240	542	769	9,895	12,476	17,697	51,967	55,601
United States	2,353	2,541	2,772	4,250	4,945	274,332	337,409	389,776	524,408	407,567

*State figures computed by this bank.